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Jet Noise Source Parameterization Based on Far-Field Sound Intensity Distributions[1] DIMITRI PAPAMOSCHOU, U.C. Irvine — Predictive tools for the interaction of jet noise with airframe surfaces require a model for the jet noise source that is simple yet physically relevant. The model used here consists of the incoherent superposition of a wavepacket and a monopole. Data to parameterize such model are limited primarily to far-field sound pressure level spectra. For a given frequency, the source parameters are determined by matching, in a least-squares sense, the polar intensity distribution in the far field. Even though only a small fraction of the wavepacket spectral content radiates to the far field, it is possible to construct models for the jet noise source that reproduce well the far-field polar intensity distribution and contain reasonable wavepacket parameters. In particular, the directivity pattern of the sound intensity provides strong guidance as to the azimuthal mode content of the wavepacket. The contribution of the monopole is small and typically on the order of 10% of the peak intensity. The model is extended to non-axisymmetric jets and to jets with limited azimuthal coherence.

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